

REMARKS

At the time of the Final Office Action dated October 1, 2004, claims 1-71 were pending in this application. Of those claims, claims 1-7, 15-26, 38-44, 60-62, and 66-71 have been rejected and claims 8-14 and 63-65 have been withdrawn from consideration pursuant to the provisions of 37 C.F.R. § 1.142(b). Applicants acknowledge, with appreciation, the Examiner's allowance of claims 27-37 and 45-59. Independent claims 1, 15, and 38 have each been amended to delete the phrase "wherein the phase shifter film is configured for exposure with ArF laser wavelength." Claims 72-74 have been added, respectively dependent upon independent claims 1, 14, and 38, and each of new claims 72-74 recites the phrase "wherein the phase shifter film is configured for exposure with ArF wavelength laser radiation." Claims 27-37 and 45-49 have been amended to address an informality. Applicants submit that the present Amendment does not generate any new matter issue.

On page 2 of the Office Action, the Examiner objected to Fig. 1 with regard to an informality. In response, Applicants have amended Fig. 1 in the manner suggested by the Examiner.

On page 3 of the Office Action, the Examiner objected to specification with regard to various informalities. In response, Applicants have amended the specification in the manner suggested by the Examiner.

The Examiner also objected to the term "ArF laser wavelength" in claims 1, 15, and 38. Applicants note that the limitation referred to by the Examiner has been deleted from claims 1, 15, and 38 and reintroduced into claims 72-74. Furthermore, the limitation now recites the phrase "ArF wavelength laser radiation."

With regard to claims 27-37 and 45-49, the Examiner objected to these claims for an informality. In response, Applicants note that these claims have each been amended to recite a "process for making." Applicant, therefore, respectfully solicits withdrawal of the imposed objections to the specification, drawings, and claims.

CLAIMS 1, 15, AND 38 ARE REJECTED UNDER THE FIRST PARAGRAPH OF 35 U.S.C. §

112

On pages 4 and 5 of the Office Action, the Examiner asserted that the phrase "phase shifter film configured for exposure with ArF laser wavelength" contains subject matter not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor had possession of the claimed invention.

Specifically, in the paragraph spanning pages 4 and 5 of the Office Action, the Examiner stated:

Since the only amendment is specific to the configuration for exposure with ArF, the disclosure does not clarify how this configuration would differ from that for any other exposure light. There is no configuration disclosed for exposure with ArF in the specification. There is no unambiguous definition of the product.

As previously noted, the limitation referred to by the Examiner has been deleted from claims 1, 15, and 38 and reintroduced into claims 72-74, and the limitation now recites the phrase "ArF

wavelength laser radiation." As is well known in the art, certain materials are capable of passing/transmitting certain wavelengths of radiation and blocking other wavelengths of radiation. Furthermore, changing the material may also change the wavelengths of radiation that is transmitted and the wavelengths of radiation that is blocked.

As discussed in the paragraph spanning pages 22 and 23, the phase shifter film, for example, the exposure light converts the phase of the transmitted exposure light by approximately 180°. Additionally, the phase shifter film transmits, for example, 1% to 40%, of the exposure light. Referring to Table 10, samples TM1-TM4 are described as transmitting 2% to 9% of the exposure light (i.e., ArF laser - 193 nm) and converting the phase of the transmitted exposure light by approximately 180°. The film formation conditions of samples TM1-TM4 are described in Example 4 (pages 11-12 of the specification).

Applicants also note the Examiner's comments regarding Applicants' definition of the term "transmittance" within the specification. As cited by the Examiner, page 20, lines 20-21 of Applicants' specification states that "a phase shift film, which has a high quality of 8% or more of transmittance." The Examiner also noted Applicants referred to transmittance being between 1% to 40% (i.e., see paragraph spanning pages 22 and 23), and concluded that "Applicants' definition of the product is vague and tenuous." Notwithstanding that the term "transmittance" is neither found in the rejected claims, as previously presented, nor in the newly presented claims 72-74, the Examiner has failed to explain why Applicants' "definition of the product" is vague and tenuous.

Applicants statement that a phase shifter film having a transmittance of greater than 8% is considered "high quality," in no way, limits the definition of "transmittance" to greater than 8%. Furthermore, language found in the paragraph spanning pages 22 and 23 (i.e., "which has a necessary transmittance (for example 1% to 40%) and is made ...") states that transmittance includes 1% to 40% but is not necessarily limited to 1% to 40%. There is nothing vague and tenuous about these statements.

The final paragraph on page 5 of the Office Action, compares the Examiner's assertions and an argument presented by Applicants in the Amendment filed June 16, 2003. Unlike Nagatani (addressed by Applicants in the Amendment filed June 16, 2003), which was completely silent as to if (or what) other types of film can be formed with a long throw sputtering device, not only have Applicants stated (on page 26, lines 4-8) that other materials can be used to form that claimed phase shifter film, Applicants have also provided specific examples of other materials besides molybdenum silicide that can be used.

For the reasons stated above, the claimed subject matter has been described in the specification in such a manner as to reasonably convey to one skilled in the art that Applicants had possession of the claimed invention. Applicants, therefore, respectfully submit that a rejection of claims 72-74 under the first paragraph of 35 U.S.C. § 112 would not be proper.

CLAIMS 1-7, 15-26 AND 38-44 ARE REJECTED UNDER 35 U.S.C. § 102 FOR ANTICIPATION OR, IN THE ALTERNATIVE, UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS, BASED UPON MITSUI, U.S. PATENT NO. 5,635,315 (HEREINAFTER MITSUI '315)

On page seven of the Office Action, the Examiner admitted that Mitsui '315 does not teach that the phase shifter film is formed by long throw sputtering. Instead, the Examiner asserted that "Applicant has not claimed unique structures for the film." The lack of the reference teaching for the claimed element precludes anticipation under 35 USC § 102.

CLAIMS 60-62 ARE REJECTED UNDER 35 U.S.C. § 102 FOR ANTICIPATION OR, IN THE ALTERNATIVE, UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS, BASED UPON MITSUI, U.S. PATENT NO. 5,942,356 (HEREINAFTER MITSUI '356)

As in the prior rejection, the Examiner admitted that that Mitsui '356 does not teach that the phase shifter film is formed by a long throw sputtering device or method. Therefore, rejection under 35 USC § 102 has not been established.

CLAIMS 66-71 ARE REJECTED UNDER 35 U.S.C. § 103 FOR OBVIOUSNESS BASED UPON MITSUI '315 IN VIEW OF MITSUI '356 AND FURTHER IN VIEW OF ISAO ET AL., U.S. PATENT NO. 5,605,776 (HEREINAFTER ISAO)

Claims 66-71 are dependent from independent claim 1.

On pages 12-19, the Examiner submitted an extensive reply to the comments made by Applicants in the Amendment filed June 14, 2004, with regard to the above identified rejections. Many of the Examiner's comments have been addressed above. On page 16 of the Office

Action, the Examiner cited In re Schreiber and stated "if a prior art structure is capable of performing the intended use as recited in the claim, then it meets the claim." In this regard, the Examiner is directed to the last paragraph in M.P.E.P. § 2114, entitled "A PRIOR ART DEVICE CAN PERFORM ALL THE FUNCTIONS OF THE APPARATUS CLAIMED AND STILL NOT ANTICIPATE THE CLAIMS." The limitation at issue in the present claims is directed to a structure formed by a particular process. The claims at issue in In re Schreiber involved structure that performed a particular function.

On page 16 of the Office Action, the Examiner acknowledged that Applicants argued that the present claims structurally distinguish the claimed invention over the applied prior art, but the Examiner, in disagreeing with this argument stated "[y]et the only evidence of structural difference offered by Applicants are the performance (functional) measures (of transmittance, phase shift, refractive index and extinction coefficient)" (emphasis in original). The Examiner is correct in asserting that Applicants have argued that performance measures distinguish the claimed invention; however, the Examiner has failed to recognize that these performance measures are a direct result of structural differences between the claimed invention and the prior art. If, as argued by the Examiner, no structural differences existed between the claimed invention and the prior art, then all of the performance measures of the phase shifter film of the applied prior art would be identical to those of the phase shift films of the claimed invention. However, as argued by Applicants, these performance measures are not identical.

Page 17 of the Office Action asserts that "Applicants' arguments regarding density of films and lower impurities in LTS-formed films (advanced in the earlier filed response) are not

supported by any data nor is it known to one of ordinary skill in the art." For support, Applicants need only refer to the article cited by the Examiner on page 18 of the Office Action (i.e., Smy), which states that "[c]ollimated systems show least asymmetry but there are possible problems with particulation not present for longthrow systems." Thus, Smy recognizes the lower impurities resulting from a LTS process.

The paragraph spanning pages 17 and 18 recognizes that "the LTS process provides more uniform coverage of the substrate" but cited the Smy article and another article and asserted that other "techniques, with atmosphere control (gas) *without* the long-throw set up are known to produce microstructurally similar films" (emphasis in original). Besides the difference cited in the paragraph immediately above, Smy discusses other differences between the LTS process and the other techniques known to produce microstructurally similar films. Therefore, although certain similarities may exist between a film formed by a LTS process and other processes, significant structural differences between these processes also exist.

Page 18 of the Office Action again cites In re Schreiber and asserts that "(micro) structural differences alone ... would not confer patentability unless the (micro) structural differences are critical to the function of the [device]." Applicants submit, however, that In re Schreiber does not support this assertion.

Regarding the paragraph spanning pages 18 and 19 of the Office Action, Applicants note that the claimed phase shifter mask has improved qualities (e.g., reduced defects), and as a result,

these improved qualities affect (in a manipulative sense) the claimed exposure method since the improved quality of the phase shifter mask improves the quality of the exposure.

As admitted by the Examiner, as argued by Applicants, and even as taught by the Examiner's cited articles, a phase shifter film formed by long-throw sputtering is structurally different than a process formed using the process of the applied prior art. This structural difference, therefore, is not anticipated by the applied prior art. Furthermore, as admitted by the Examiner in allowing claims 27-37 and 45-59, it would not have been obviousness for one skilled in the art to use long-throw sputtering to form a phase shifter film. Therefore, Applicants respectfully solicit withdrawal of the above-identified rejections.

**CLAIMS 1, 15, AND 38 ARE SEPARATELY REJECTED UNDER 35 U.S.C. § 102 FOR
ANTICIPATION BASED UPON KAWANO ET AL., U.S. PATENT NO. 5,728,494 (HEREINAFTER
KAWANO) AND SMITH, U.S. PATENT NO. 6,309,780**

As admitted by the Examiner, neither Kawano nor Smith teach or suggested forming a phase shifter film using long-throw sputtering. Furthermore, as admitted by the Examiner in allowing claims 27-37 and 45-59, it would not have been obviousness for one skilled in the art to use long-throw sputter to form a phase shifter film. Therefore, Applicants respectfully solicit withdrawal of the above-identified rejections.

Applicants have made every effort to present claims which distinguish over the prior art, and it is believed that all claims are in condition for allowance. However, Applicants invite the Examiner to call the undersigned if it is believed that a telephonic interview would expedite the

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prosecution of the application to an allowance. Accordingly, and in view of the foregoing remarks, Applicants hereby respectfully request reconsideration and prompt allowance of the pending claims.

To the extent necessary, a petition for an extension of time under 37 C.F.R. § 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417, and please credit any excess fees to such deposit account.

Respectfully submitted,

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